

ATKA/AMLIA ISLANDS MANAGEMENT AREA  
PINK SALMON FISHERY ANNUAL REPORT, 1992

By

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and  
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## INTRODUCTION

The purpose of this report is to document the Atka and Amlia Island experimental pink salmon *Oncorhynchus gorbuscha* fishery.

### *Geography*

Atka and Amlia Islands are located in the Andreanof archipelago in the central Aleutian Islands (Figure 1). The islands are located approximately 1,250 miles west of Anchorage, Alaska. The Atka/Amlia Salmon Management Area is bounded by Seguam Pass (172° 23'W.long.) on the east and Atka Pass (175° 23'W.long.) in the west. Atka and Amlia Islands are 57 and 48 miles in length, respectively; both islands for the most part are relatively narrow, three to seven miles in width (Figure 2). The steep topography of the islands creates small, short salmon streams.

Travel by small boat is often difficult due to weather and tidal currents. The maritime climate is characterized by frequent storms alternating with periods of dense fog. Steep slopes of the mountains often channel "williwaw" winds offshore on the leeward side of the islands creating an additional hazard to navigation. Tidal currents are also a significant problem, particularly in traversing Amlia Pass. Located between Atka and Amlia Islands, this pass is one of the narrowest and most dangerous in the Aleutian Islands. Numerous submerged rocks and reefs create navigation hazardous to all types of vessels. Tidal speeds up to 10 knots have been recorded with heavy tide rips and maelstroms. The tidal influence extends five miles or more north and south of the pass when the tide ebbs and floods (Nick Nevezarof, personal communication, Atka).

### *Demographics*

The remote village of Atka is located at 174°15'W.long., 52°N.lat. and is the westernmost and southernmost civilian community in Alaska. Surface freight arrives once a year by barge or occasionally by unscheduled freighter; air service from Dutch Harbor is twice a week, when the weather allows. A small community of 83 persons, it relies on fishing for much of its cash and subsistence economy. None of the Atkan residents (except the Village Public Safety Officer) have full time jobs. There are 23 part time jobs averaging 22 hours per week. While some residents journey to Dutch Harbor, the Pribilofs, and mainland to fish or seek seasonal work off island; most of the men in the village participate in the local halibut fishery for their main source of income.

## ***Fishing Fleet***

The local fishing fleet is composed primarily of small skiffs ranging from 16 to 24 feet in length, several are homemade. Most of the commercially manufactured boats are 18 foot, light gauge aluminum skiffs. The lack of capital and a safe all weather anchorage limits the size of the skiffs to those that can be hauled on to a beach during inclement weather. Most of the skiffs are small enough to be portaged with a 4-wheeler between Nazan and Korovin Bays on Atka Island. Boat trips to the south side of Atka or to Amlia Island require a high level of local knowledge and seamanship.

## ***Development of the Fishery***

The development of a commercial salmon fishery in the remote Aleutian Islands, near Atka, has been a long and difficult process. It has been delayed by the remote location, lack of a local infrastructure to harvest and process salmon, and depressed pink salmon markets. Creation of a new salmon management area in the Aleutians was viewed by established fishermen as a threat to the salmon limited entry program. Some members of the Alaska Board of Fish (ABOF) feared a new "open to entry" fishery would create management difficulties by shifting effort from other areas. The potential interception of migrating salmon bound for established Alaskan fisheries, during June and early July, also was a concern (A. Shaul, ADF&G, Cold Bay, personal communication; ADF&G and CFEC, 1981).

In spite of occasional explorations by Area M (Alaska Peninsula/Aleutian Islands) purse seiners to Umnak Island and one venture to Attu Island in 1963, the American commercial salmon fishery in the Aleutian Islands never expanded west of Unalaska Island (Atkinson, 1955; ADF&G and CFEC, 1981; A. Shaul, ADF&G, Cold Bay, personal communication). Extensive Japanese fisheries adjacent to the central and western Aleutian Islands from the 1950s to mid 1970s focused on interception of Asian and Alaska mainland stocks (Chitwood, 1969).

In 1980 the Alaska Legislature requested Aleutian Island salmon abundance and distribution information from the Alaska Department of Fish and Game (ADF&G). The Legislature also asked the Commercial Fisheries Entry Commission (CFEC) for a review of the effects of creating a new Aleutian Islands salmon permit area (ADF&G and CFEC, 1981). Funding followed in 1982 for ADF&G to conduct the first comprehensive salmon survey of the Aleutian Islands and determine the potential for developing new salmon fisheries. Small stocks of sockeye *O. nerka*, pink *O. gorbuscha*, chum *O. keta*, and coho *O. kisutch* salmon occurred through out most of the Aleutian Islands. With the exception of the existing fisheries near Unalaska Island, only pink salmon stocks in the vicinity of Atka and Amlia Island had a potential of developing a viable commercial fishery (Appendix A, Holmes, 1982).

Between 1982 and 1986 the infrastructure of the community of Atka progressed. New housing, power generation facilities, roads, and an aircraft runway were constructed and upgraded; in

addition a fishermen's co-operative was formed. In 1990, a modern fish processing/freezing plant was constructed to process halibut, cod, and salmon.

The Sixteenth Alaska Legislature requested ADF&G and CFEC to review the potential of a salmon fishery in the vicinity of Atka Island. The CFEC and ADF&G held a meeting in Atka during June of 1989. The agencies subsequently reviewed the regulatory changes necessary to establish the new fishery, evaluated the potential for commercial harvest, and outlined policy issues to be addressed (ADF&G and CFEC, 1990). In 1991, the Alaska Board of Fisheries (ABOF) and the CFEC, approved an experimental, open to entry, set gill net fishery for pink salmon near Atka and Amlia Islands. The experimental three year fishery was initiated during the 1992 season.

### ***Production Potential***

The pink salmon production potential of most streams in the Aleutian Islands is small compared to systems on the Alaska Peninsula (Holmes, 1982; Shaul et al., 1991). Based on peak escapements in 1982, there are 21 (10,000-86,000 fish) pink salmon streams located on the south and north/central portion of Atka Island and 6 (5,000-18,500 fish) streams on western Amlia Island which could produce commercial numbers of salmon. Peak salmon escapement counts of 578,000 on Atka Island and 138,000 on Amlia Island were expanded using the Johnson and Barrett (1988) method to estimate total escapements of 1,069,000 and 255,000 pink salmon, respectively. These escapements could equate to a harvests of up to 200,000 or more pink salmon during a good year (A. Shaul, ADF&G, Cold Bay, personal communication). If returns reached the exceptional 1982 level a harvest of 300,000 or more pink salmon might be achieved.

Atka Island has the largest known runs of sockeye, chum, and coho salmon west of Unalaska Island (Holmes 1982). They are relatively small salmon stocks that would not be expected to support a directed commercial effort. Small numbers of these fish are harvested incidental to the targeted commercial pink salmon fishery. These small stocks are very important to the local subsistence harvest (Veltre and Veltre, 1983; Holmes 1982).

### ***Processing***

A modern fish processing and freezer facility was completed at the City of Atka in 1990. The Atka Fisherman's Cooperative, Atka Indian Reorganization Act (IRA) Council, and the city of Atka raised approximately \$430,000 to purchase this facility. The prefabricated plant was assembled by local fishermen. The Atka Fisherman's Association Cooperative (AFA) operates and maintains the facility. J.K. Samuelson (S.I. Atka Fisheries) operated the facility for the CO-OP and the community during the 1992 season. The plant has a daily freezing capacity of 20,000 pounds and a holding capacity of 400,000 pounds. The initiation of the small salmon fishery allows local residents to operate the facility between halibut openings.



## **METHODS**

### ***Summary of Area Specific Regulations***

#### **Introduction**

The ABOF and CFEC designated fishing periods and gear regulations for the Atka/Amlia fishery to promote the harvest of local pink salmon.

International North Pacific Fisheries Commission (INPFC) studies have established that Bristol Bay sockeye and other salmon stocks migrate through the Aleutian Islands during the spring and early summer (Hartt 1962, French et al., 1975). To prevent the interception of migrating stocks of salmon, regulations were adopted restricting the commercial fishery to the month of August, after the migration timing of non-local sockeye and chum salmon stocks. Regulations for defining the use of set gillnets further confines the harvest to the near shore area.

#### **Fishery Participants**

Participation in the new open-to-entry Atka/Amlia Islands Area fishery is restricted to CFEC Area F (Atka-Amlia Islands) Set Gill Net Interim Use Permit holders and CFEC Area M (Alaska Peninsula/ Aleutian Islands) Purse Seine Permit holders. Previous to the establishment of the Atka/Amlia Area fishery, Area M seiners were allowed to fish these waters after July 10; however, historical harvest records indicate no landings were made.

#### **Registration**

Each permit holder must register his or her self and each vessel that will be operated. Vessels acting as salmon tenders, and fish buyers are also required to register prior to operating in the Atka/Amlia Area. Registration must be completed by contacting an area management biologist with ADF&G at Atka, Cold Bay, Sand Point, or other places designated by the ADF&G, at least 48 hours prior to commercial fishing for salmon in the Atka-Amlia Islands Area.

#### **Fishing Season**

Commercial salmon fishing in the Atka/Amlia Area is restricted to August 1 through August 31. Fishing periods are from 6:00 a.m. until 6:00 p.m. during Mondays, Wednesdays, and Fridays.

#### **Closed Waters**

Closed waters were restricted to a 500 yard radius at the terminus of all salmon streams in the Atka/Amlia Management Area. Local anadromous streams are identified in the Catalog of Waters Important For the Spawning, Rearing, or Migration of Anadromous Fishes, ADF&G (1992a). Stream markers identifying closed waters were set at the mouths of 24 streams on Atka and 4 on Amlia Islands. All of the streams that had fishing activity nearby were identified with markers. Adverse weather prevented marker placement on additional streams.

## **Purse Seine Specifications**

Purse seine gear specifications are the same in the Atka/Amlia Islands Area as listed in the commercial salmon regulations book for the Aleutian Islands Management Area (ADF&G 1992b).

## **Set Gillnet Specifications**

1. Each CFEC permit holder may operate no more than one gill net of which the total aggregate length cannot exceed 100 fathoms (not including the lead).
2. Set gill nets must be operated in substantially a straight line except that no more than 25 fathoms of the offshore end of the set gill net may be used as a hook. A hook may be used in any configuration.
3. The mesh size of the set gill nets shall not exceed 5 inches.
4. The maximum depth of the set gill nets shall not exceed 90 meshes.
5. Twenty-five fathoms of seine webbing may be used as a lead, and may be attached only to the shoreward end of a set gill net; the shoreward end of the lead or gill net must be attached to the beach above the high tide.
6. During hours of darkness, each set gill net must be marked with at least one red light on the seaward end of the net.
7. No vessel used for set gill net fishing may exceed 29 feet in overall length.

## ***Escapement Enumeration***

### **Objectives**

The primary objective of stream surveys was to enumerate pink salmon abundance. Due to earlier or later run timing, sockeye, chum, and coho salmon were not enumerated at periods of peak abundance and do not reflect an estimate of total abundance. A secondary component of the stream surveys was an evaluation of pink salmon spawning habitat.

The combination of bad weather, the remoteness of Atka and Amlia Islands, the high cost of helicopter charters, and the lack of available aircraft precluded the use of aerial surveys to enumerate salmon escapements.

Escapements were evaluated by means of foot surveys along twelve index streams located in the central portion of Atka Island. Surveys begin with observations of pink salmon in the bays, buildups at stream mouths, then surveys of the streams themselves.

Peak counts reflect the highest number of fish counted during the season, not necessarily the total abundance. Cousens et al. (1982) reported that aerial and foot surveys for salmon often underestimate the true count by not enumerating the entire population over time.

The estimated total pink and chum escapements for 1982 and 1992 were based on Johnson and Barrett's (1988) geometric approach to estimating total escapement. An assumed 15 day stream-life was employed with this method.

## **1992 Escapements**

Estimates of total escapement for 1992 were based on the expansion of foot surveys counts. Sockeye escapements in Korovin Lake were expanded by a factor of 2.0 based on Barrett et al. (1984). The sockeye and coho salmon escapements observed in small clear streams were not expanded. Pink and chum total escapements were estimated for streams with multiple surveys using the method developed by Johnson and Barrett (1988). For all pink and chum escapements with only a peak count or where the computed value was less than the peak count, an expansion factor of 1.65 was used for pink salmon, and 1.7 for chum salmon. These values were derived from the ratio of peak count to total estimated escapement for streams where the ascending, peak count, and descending counts were unavailable.

## ***Spawning Habitat Evaluation***

A secondary component of the stream surveys was an evaluation of pink salmon spawning habitat. Selected streams were evaluated on Atka Island to determine pink salmon spawning capacity. Streams on Amlia Island were not surveyed due to bad weather.

Total pink salmon spawning habitat (in  $m^2$ ) was estimated for each stream. Each stream was surveyed from the mouth to the upper limit of pink salmon distribution. The distribution of spawning salmon in each stream was identified based on the local knowledge of staff technician Moses Dirks (a resident of Atka); and by examination of the stream's gradient, substrate, and water velocity.

Streams were surveyed by walking in the center of each stream to evaluate the percentage of spawnable habitat in each reach using a technique discussed by Swanton and Dalton (1993). The length of the stream was measured in the number of paces walked in the center of the stream converted to meters. Stream width was measured using a tape measure. Available spawning area (expressed in percent) was based on observations of substrate size (.25 to 5.5 inches in diameter), embeddedness (relative amount of foot pressure to displace substrate), water depth (> 4 inches, < 4 feet), and stream velocity (<2.7 ft/sec, a velocity that was difficult to stand in the stream). These criteria were evaluated by the observer, and recorded for each reach. The results were summarized to define available spawning habitat for the entire stream. These measurements were expanded by constants described in Swanton and Dalton (1993), to project spawning capacity (the potential number of spawners for each stream). These estimates are useful for the development of preliminary escapement goals.

## ***Development of Preliminary Escapement Goals***

Interim salmon escapement levels were developed for streams accessible to Atka fishermen which had the potential to support commercial fishing. These preliminary goals were developed based on: a) spawning capacity derived from habitat evaluation, b) percentage of the 1982 escapements (25%, 50%), and c) the field staff's judgement based on experience in other regions of the state.

### **Spawning Capacity Method**

Spawning capacity for each stream was estimated by multiplying the amount of available spawning habitat ( $m^2$ ) by three spawner/ $m^2$  capacities. These densities were developed by Swanton and Dalton (1993): 1.4 spawners / $m^2$  based on data presented by Barrett, et al. (1990); and 2.0 spawners / $m^2$  and 3.0 spawners / $m^2$  (high range) based on their work on Kodiak and Chignik Management Area streams.

### **Percentage of 1982 Survey Method**

The exceptional 1982 escapements may have been 100-200% more than the necessary spawning capacity of many streams (Glen Davenport, ADF&G (retired), Corvallis, Oregon; Arnold Shaul, ADF&G, Cold Bay, personal communication). Because the 1982 escapements appeared excessive spawning requirements were estimated by multiplying the 1982 surveys by .25 (low range) and .50 (high range).

### **Subjective Method**

The authors subjectively compared the spawning habitat capacities with the 1982 survey percentage estimates. These estimates were in turn compared to 1992 escapements and the collective experience of the authors in other parts of the State.

## ***Logistics and Local Hire***

Logistics, particularly transportation of staff and equipment were very difficult for this project. The arrival of the staff at Atka was delayed nearly a week; equipment and support materials did not reach their destination until 9 days after the staff's arrival on July 28. With the support of the local community, in addition to considerable scrounging and improvisation, it was possible to initiate this project without field support equipment.

Commodities such as food, hardware, and fuel were made purchased in Atka to enhance the local economy, instead of shipping in materials at lower cost. After it was determined that equipment needs could not be met locally, field gear was purchased through the State bidding procedures and shipped to Atka. A local home was leased for two months to provide office, storage, and living facilities.

Two Fish and Wildlife Technician III's were hired from Atka during the project. Moses Dirks was employed for five and one half weeks, and Ronald Snigaroff was hired for two weeks. Their knowledge of the area and seamanship skills insured safe field operations during adverse weather conditions. The technicians' understanding of local residents and their customs also enhanced the project's effectiveness. Their assistance in interactions with the community, borrowing tools and equipment, and translating from Aleut or Russian when necessary allowed the biologists to benefit from the extensive knowledge of local residents.

## RESULTS

### *Season Summary*

#### **Commercial Harvest**

The commercial fishery opened on August 5th. A total of 17 fishermen registered to fish set gillnet gear; no purse seine permit holders from Area M participated in the fishery. All of the participants were from the community of Atka; two work on St. Paul Island during the winter but returned to Atka for the summer fishery. By the season's end, August 28, a total of 13 fishermen participated making 41 landings.

A total of 8,533 salmon weighing 30,712 pounds were landed. The harvest included 231 sockeye, 42 coho, 7,972 pink, and 308 chum salmon (Table 1). Pink salmon were the targeted species in this fishery, other species were taken incidently. The incidental catch originated primarily from small local stocks of sockeye, coho, and chum salmon (based on examination of secondary sex characteristics and gonadal development).

The lower than expected harvest resulted from lower than expected returns to local streams combined with poor weather conditions which restricted the small skiffs to Nazan and Korovin Bays. Potential harvest levels were also reduced during August when the majority of the fleet shifted their efforts to the more financially lucrative halibut fishery. A total of 121 pink and 30 chum salmon from the commercial salmon harvest were used locally for halibut bait.

Pink salmon averaged 3.4 lbs, approximately 1/2 lb larger than average weight of the 1982 samples. The size of gillnet used by most of the fishermen may have been selective towards larger pink salmon. The majority of the fishermen used 5" mesh gill nets instead of a more optimal 4 1/2"-4 3/4" mesh.

#### **Subsistence Harvest**

The subsistence salmon fishery is essential to the community. While ADF&G does not actively monitor the subsistence harvest of salmon at Atka and Amlia Islands it is believed that harvest patterns have not changed significantly since Veltre's and Veltre's 1983 resource utilization report. Their report noted that 50% to 75% of the food resources consumed by local residents

are gathered locally. All species of salmon, particularly sockeye salmon are highly valued. The sockeye salmon run into Korovin Lake is the most accessible to local residents.

At the author's request a salmon subsistence survey was conducted by Lisa Scarbrough, ADF&G, Subsistence Division, Anchorage, during February of 1993. This study included 22 of the 23 resident families of the community. The salmon resource is shared by all of the households interviewed, while only 77% of the households participated in the actual harvest (Table 2). A total of 1,454 salmon were taken for local subsistence; sockeye (501) and coho (462) salmon were utilized in the highest numbers (Table 3). The fish were mainly taken by rod and reel (35%), and set gillnet gear (30%). A fish trap had been reportedly used in the past to take Korovin Lake sockeye, it was not used to harvest fish this season. While some residents journey to Amlia Island and other locations on Atka for subsistence purposes, the majority of the salmon harvest takes place in Korovin and Nazan Bays.

### **ADF&G Inseason Management**

The scheduled August 3 opening of the fishery was delayed until August 5th due to the local processors not having an ADF&G "Intent to Operate Form" to process salmon. The fishery was opened after confirmation that the permit was issued in Juneau. During most of August windy weather restricted the fishery to a few accessible streams in Nazan and Korovin Bays. At mid-season (August 17) the markers were moved from 500 to 1000 yards for Army Dock (Qizang Chiganaa) Creek, which had received disproportional fishing effort. Further fishing time adjustments were made to allow fishing during periods of good weather; the majority of the management area was allowed to remain open for continuous fishing, while Nazan Bay and Old Harbor Lagoon remained on a three day a week schedule.

The effect of the fishery on salmon escapements were evaluated inseason using the collective judgment of the field staff. Stream surveys were conducted whenever the weather allowed. The only previous abundance estimates in 1982 were not directly comparable, as escapement that year may have been in excess of most stream's spawning habitat's capacity; this was indicated by the presence of pre-spawning mortalities and the use of marginal spawning habitat.

Meetings were held prior to and during the fishing season to inform the community of the goals and objectives of the pink salmon fishery. Attendees included members of the Atka Fishermen's Association, the City of Atka, the Atka Village IRA council, and ATAXM Native Corporation. These meetings included: a slide presentation on the 1982 Aleutian islands salmon survey, a discussion of important commercial salmon fishing regulations, fish ticket reporting, retaining fish from the catch for personal use, and potential conflicts with subsistence salmon harvest. The staff discussed the State's priority for subsistence harvest and asked the community to advise them of any possible conflicts. The potential effect of the commercial pink salmon fishery on the late sockeye run to Korovin Lake was discussed. The public was advised that any conflicts could be resolved by closed water adjustments. No conflicts with the subsistence fishery were reported to ADF&G.

Fishery information was announced on VHF radio, was posted at the City of Atka office, Atka Fishermen's Hall, and the City Post Office and Community Center.

## **Value of the Fishery**

The value of the fishery is difficult to estimate. As of this date the processor for the Atka Fisheries Association Cooperative has not paid the local fishermen. It is projected that fishermen might have received \$.09/lb. for processed pinks (ex-vessel value), with a potential of up to \$.50/lb. if the fish were sold as bait. The value of the pink salmon catch could range from \$3,067 to \$17,000. No price estimates are available for the incidental species of salmon.

## **Escapements**

Anadromous streams are illustrated in Figure 2. The delineated portions of each stream indicates the maximum distribution of salmon in each system.

Surveys were only completed for accessible streams (Table 4). The projected total escapement for those streams should not be interpreted as the escapement for the entire island but rather as a relative index when compared with the same streams in the 1982 survey.

This year's pink salmon escapements were less than expected. A total of 23 streams were surveyed. Weather restricted peak escapement surveys to 17 streams, with a total peak count of 42,996 pink salmon. The estimated total escapement for those systems was 71,728 fish (Table 5). The only previous survey of these streams was in 1982, an atypically high escapement year for the Aleutian Islands. A total escapement of 586,350 pink salmon was estimated for the same streams in 1982. Initial observations indicate a reasonable escapement (mid-point of preliminary escapement goals) for these streams would be about 140,000 fish (Table 6).

A total of 1,100 sockeye were observed in Korovin Lake; 6 sockeye were observed in two additional streams. A total of 1,770 chum salmon were noted in two systems with a the estimated total escapement of 3,030 fish.

### ***Preliminary Escapement Goals***

It was necessary to initiate the fishery with out escapement goals. The Department believed that the fishing period schedule, gear restrictions, and 500 yard markers defined by the ABOF would allow for a small fishery and adequate escapements levels. Field staff relied on their collective experience in other areas of the State and the knowledge of local residents during much of the fishery.

The proposed escapement goals are based on only two "even-year" escapements and spawning habitat surveys of 11 streams. The authors acknowledge the limited information available to develop escapement goals. Pink salmon escapement goals are often derived after examination of several years catch and escapement data. The proposed goals will be continue to be revised as further information is developed for both even and odd-year returns for Atka and Amlia Island streams.

Preliminary escapement goals were estimated by three methods: percentages of the 1982 escapement levels, spawning habitat capacity, and the field staff's comparison of these methods with 1992 escapements.

### **Percentage of 1982 Escapement Method**

Escapement data for Atka and Amlia Islands area is limited to 1982 and 1992. The lack of an adequate escapement history precludes projection of spawner/recruit estimates to develop escapement goals. Percentages of the 1982 surveys were applied to a total of 26 streams. The 1982 escapements for these streams was 572,400 pink salmon. The estimated number of spawners ranged from approximately 143,000 (25 % of 1982) to 286,000 pink salmon (50% of 1982), with a mid-point of 214,500 fish. In view of the spawning habitat evaluation and previous field experience the authors would propose that the lower number is more appropriate for Atka streams.

### **Spawning Habitat Evaluation Method**

A total of 11 streams on Atka Island were evaluated for spawning habitat (Table 6). These small streams had a total of 46,547 square meters of habitat for pink salmon spawning. The estimated optimal number of spawners for those streams ranged from approximately 65,000 to 140,000 pink salmon; with a mid-point near 93,000 fish.

### **Subjective Method**

Escapement levels of eleven streams examined by the previous methods were adjusted by the author's collective field experience. While estimates for individual streams varied, the overall ranges and mid points for comparable streams were reasonably close. The percentage of the 1982 survey method ranged from 72,000 to 142,500 pink salmon with a mid point of 107,000 fish. The spawning capacity method ranged from 65,000 to 140,000 pink salmon with a mid point of 93,000 fish. The mid point of the percentage method was about 13 % higher than the habitat capacity method.

Preliminary escapement goals were estimated for 26 streams. These escapement ranges reflect an upper end near the mid point of the habitat evaluation method. The projected escapement for these streams ranges 98,000 to 182,000 fish. The preliminary escapement goals are expected to be refined as additional habitat surveys are conducted and succeeding year's escapements are evaluated. They should be viewed as relative guidelines and not absolute values.

In view of the highly variable escapements in the Aleutians (Holmes, 1982; Arnold Shaul, ADF&G, Cold Bay personal communication) the authors suspect that the maximum spawning potential may not often be reached.



### *Outlook for the 1993 Season*

The variable nature of pink salmon returns in the Aleutian Islands combined with the lack of multiple year escapement information make it impossible to project next season's catch and escapement. Comparison with other areas in the Aleutian Islands may present some indication of the 1993 returns. Salmon catch and escapements in the Unalaska District during odd numbered years is generally weak (Arnold Shaul, ADF&G, Cold Bay, Personal Communication). Occasionally there have been moderate pink salmon returns at nearby Adak during odd years (Linda Slater, USFWS, Adak, personal communication). If moderate returns occur and the salmon are sold locally as bait there may be a potential for a successful small commercial fishery in 1993.

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Table 1. Atka/Amlia Islands Area commercial salmon harvest, 1992<sup>a</sup>.

Date	Number		Species											
			Chinook		Sockeye		Coho		Pink		Chum		Total	
	Permits	Lndgs	No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.
08/05	3	3	0	0	0	0	0	0	752	2,417	3	17	755	2,434
08/07	1	1	0	0	0	0	0	0	153	522	0	0	153	522
08/10	4	4	0	0	0	0	1	5	1,584	5,396	150	1,020	1,735	6,421
08/12	7	7	0	0	5	25	3	14	1,524	5,199	123	866	1,655	6,104
08/14	9	9	0	0	7	40	0	0	1,661	5,544	2	10	1,670	5,694
08/17	2	2	0	0	110	454	1	8	468	1,590	0	0	579	2,052
08/18	3	3	0	0	49	289	2	11	411	1,483	0	0	462	1,783
08/19	8	8	0	0	32	186	12	73	973	3,479	30	129	1,047	3,867
08/21	2	2	0	0	14	73	4	22	316	1,077	0	0	334	1,172
08/25	1	1	0	0	0	0	2	15	74	250	0	0	76	265
08/26	1	1	0	0	14	80	17	117	56	201	0	0	87	398
Total	13	41	0	0	231	1,147	42	265	7,972	27,258	308	2,042	8,553	30,712
Ave. Wt.				0.0		5.0		6.3		3.4		6.6		

<sup>a</sup> The entire catch for the management area came from Korovin and Nazan Bays on Atka Island; bad weather prevented salmon harvest from other streams on Atka and Amlia Islands.

Table 2. Percentage of Atka households harvesting subsistence salmon, by gear type and species, 1992<sup>ab</sup>.

Resource	Subsistence Methods by Percent					
	Set Net	Seine	Any Subs. Gear	Removed From Commercial Catch	Rod and Reel	Any Method <sup>c</sup>
Chum	9.09	0.00	9.09	4.55	4.55	18.18
Coho	22.73	9.09	31.82	13.64	22.73	59.09
Chinook	4.50	50.00	04.55	4.55	0.00	9.09
Pink	4.55	9.09	13.64	4.55	45.45	54.55
Sockeye	27.27	13.64	40.91	9.09	13.64	63.64
Spawning Coho	0.00	0.00	0.00	0.00	4.55	4.55
Spawning Pinks	0.00	4.55	4.55	0.00	4.55	9.09
Total Salmon	27.27	18.18	40.91	13.64	54.55	77.27

<sup>a</sup> Twenty two (22) out of 23 households interviewed.

<sup>b</sup> Prepared by Lisa Scarbough, ADF&G, Subsistence Division.

<sup>c</sup> The percentage of households using salmon by species and method should not add up to 100% of the total salmon utilized.

Table 3. Estimated subsistence salmon harvest by gear type for the community of Atka, 1992<sup>ab</sup>.

Species	Harvest Units	Subsistence Methods											
		Set Net		Seine		Any Method		Commercial Catch		Removed From Rod and Reel		Any Method	
		Community Total	HH <sup>c</sup> Mean	Community Total	HH <sup>c</sup> Mean	Community Total	HH <sup>c</sup> Mean	Community Total	HH <sup>c</sup> Mean	Community Total	HH <sup>c</sup> Mean	Community Total	HH <sup>c</sup> Mean
Chum Salmon	Numbers	12.5	0.55	0.00	0.00	12.55	0.55	10.45	0.45	1.05	0.05	24.05	1.05
	Pounds	61.22	2.66	0.00	0.00	61.22	2.66	51.02	2.22	5.10	0.22	117.34	5.10
Coho Salmon	Numbers	156.82	6.82	57.50	2.50	214.32	9.32	123.36	5.36	124.41	5.41	462.09	20.09
	Pounds	741.75	32.25	271.98	11.83	1,013.73	44.08	583.51	25.37	588.46	25.59	2,185.69	95.03
Chinook Salmon	Numbers	3.14	0.14	0.00	0.00	3.14	0.14	1.05	0.05	0.00	0.00	4.18	0.18
	Pounds	37.04	1.61	0.00	0.00	37.04	1.61	12.35	0.54	0.00	0.00	49.39	2.15
Pink Salmon	Numbers	73.18	3.18	33.45	1.45	106.64	4.64	10.45	0.45	247.77	10.77	364.86	15.86
	Pounds	181.49	7.89	82.97	3.61	264.46	11.50	25.93	1.13	614.48	26.72	904.86	39.34
Sockeye Salmon	Numbers	193.41	8.41	141.14	6.14	334.55	14.55	115.00	5.00	52.27	2.27	501.82	21.82
	Pounds	715.61	31.11	522.20	22.70	1,237.82	53.82	425.50	18.50	193.41	8.41	1,856.73	80.73
Spawning Coho	Numbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.14	0.14	3.14	0.14
	Pounds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.19	0.40	9.19	0.40
Spawning Pinks	Numbers	0.00	0.00	15.68	0.68	15.68	0.68	0.00	0.00	78.41	3.41	94.09	4.09
	Pounds	0.00	0.00	24.78	1.08	24.78	1.08	0.00	0.00	123.89	5.39	148.66	6.46
Total Salmon	Numbers	439.09	19.09	247.77	10.77	686.86	29.86	260.32	11.32	507.05	22.05	1,454.23	63.23
	Pounds	1,737.12	75.53	901.92	39.21	2,639.04	114.74	1,098.30	47.75	1,534.52	66.72	5,271.86	229.21

<sup>a</sup> Twenty two (22) out of 23 households interviewed.

<sup>b</sup> Prepared by Lisa Scarbough, ADF&G, Subsistence Division.

<sup>c</sup> Household (HH)

Table 4. Salmon escapement surveys of selected streams in the Atka-Amlia Management Area, 1992<sup>a</sup>.

Stream Number	Stream Name/Location <sup>b</sup>	Date	Survey Condition	Species				Observer	Remarks
				Sockeye	Coho	Pink	Chum		
Atka (Ataxax) Island									
305-49.140	Spike's Camp (Chunixsax)	29-Jul	Good	0	0	7	0	Campbell	50 pinks at mouth.
		08-Aug	Good	0	0	195	0	Campbell	50 pinks at the mouth. Poor visibility in the bay.
		14-Aug	Good	0	0	815	0	Campbell	500 pinks at mouth. Plus 1,000 pinks in the bay.
		24-Aug	Good	0	0	2,982	4	Campbell	320 pinks at mouth. Plus 2,500 pinks in the bay.
		04-Sep	Good	0	0	2,852	0	Campbell	250 pinks at mouth. Plus 260 pink carcasses. Poor visibility in the bay, fish there but no count possible.
305-49.160	Range Creek (Aaguliigagix)	13-Aug	Poor	0	0	1,202	0	Campbell	400 pinks at mouth.
		16-Aug	Good	0	0	3,350	3	Campbell	600 pinks at mouth. 1 king in lower end of stream. Poor visibility at the mouth.
		21-Aug	Fair	0	1	5,045	1	Campbell	650 pinks at mouth. 1 king in lower end of stream. Poor visibility at the mouth and the first 100 yards of the stream.
		27-Aug	Fair	0	2	4,985	0	Campbell	365 pinks, and 1 coho at mouth. 1 king in lower end of stream.
		31-Aug	Good	0	2	4,212	0	Campbell	Very poor visibility; could not see any fish at mouth.
305-49.150	Army Dock Creek (Qizang Chiganaa)	13-Aug	Poor	0	0	687	0	Campbell	630 pinks at mouth.
		16-Aug	Good	0	0	1,415	0	Campbell	600 pinks at mouth.
		21-Aug	Fair	0	0	3,094	0	Campbell	300 pinks at mouth. Paired up and spawning.
		27-Aug	Fair	0	0	3,750	0	Campbell	280 pinks at mouth.Plus 21 pink carcasses.
		31-Aug	Good	0	0	3,903	0	Campbell	
305-46.260	Korovin Cr./Lake (Imlam Chuugaa)	10-Aug	Good	0	0	0	0	Campbell	30 pinks at mouth. 1 pink carcass in stream. 1,000 sockeye spawning in the lake. Poor visibility in the lake, and at the mouth.
		23-Aug	Fair	1,100	0	3,420	0	Campbell	22 pinks at mouth. 2 jumpers in bay.
		28-Aug	Fair	10	0	2,644	0	Campbell	
305-46.290	Old Harbor (Kangliixtax)	12-Aug	Good	0	0	85	1,117	Campbell	10 pink jumpers in bay. Plus 1 chum carcass.
		19-Aug	Fair	0	0	2,700	1,397	Campbell	10 pinks at mouth.
		25-Aug	Good	0	0	3,442	1,388	Campbell	8 pinks and 1 chum at mouth. Plus 3 pink and 463 chum carcasses.
305-46.300	North Harbor (Ugilga)	12-Aug	Fair	0	0	1,297	0	Holmes	6 jumpers in bay. Plus 1 pink carcass.
		25-Aug	Fair	0	0	4,645	4	Campbell	

-Continued-

Table 4. (page 2 of 3)

Stream Number	Stream Name/Location <sup>b</sup>	Date	Survey Condition	Species				Observer	Remarks
				Sockeye	Coho	Pink	Chum		
305-46.280	Clear Cr., Milky R. (Tangalum Angtan-Chiganaa)	11-Aug 28-Aug	Good Good	0 0	0 0	223 540	0 0	Campbell Campbell	Clear tributary off Milky River. Survey of lower half of stream.
305-46.250	Martin Harbor (Chizang)	18-Aug 26-Aug 02-Sep	Poor Good Good	0 0 0	0 0 0	1,712 2,736 2,748	0 0 0	Campbell Campbell Campbell	300 pinks at mouth. 250 pinks at mouth. 150 pinks in bay. Plus 97 pink carcasses.
305-46.270	(1 mi. NE Sarana Co.) (Alax Hatax)	18-Aug	Fair	0	0	0	0	Campbell	200 pinks at mouth. Checked mouth from boat.
305-46.240	Sarana Cove (Qyasxux "Outer")	18-Aug 26-Aug 02-Sep	Fair Good Good	0 0 0	0 0 0	0 1,000 1,052	0 0 0	Campbell Campbell Campbell	500 pinks at mouth. Checked mouth from boat. 30 pinks in bay. Plus 12 pink carcasses.
305-46.230	Sarana Cove (Qyasxux "East")	18-Aug 26-Aug 02-Sep	Fair Good Good	0 0 0	0 0 0	1,492 2,888 3,800	0 0 0	Campbell Campbell Campbell	500 pinks at mouth. 650 pinks at mouth. 708 pinks, and 2 sockeye at the mouth. Plus 250 pink, and 2 sockeye carcasses.
305-46.220	Sarana Cove (Qyasxux "West")	18-Aug 26-Aug 02-Sep	Poor Good Good	0 0 0	0 0 0	259 465 782	0 0 0	Campbell Campbell Campbell	600 pinks at mouth. 7 pinks at mouth. 10 pinks at mouth. Plus 11 pink carcasses.
305-46.210	(2 1/2 mi. E. Egg Pt.)	19-Aug	Good	0	0	10	0	Campbell	20 pinks at mouth. Survey of mouth.
305-45.200	Egg Bay (Agsagax)	19-Aug	Good	0	0	2,010	0	Campbell	10 pinks at mouth.
305-33.190	Vasilief Bay (Amunaxax "Inner")	05-Aug	Good	0	0	0	0	Campbell	Nothing.
305-33.200	Vasilief Bay (Amunaxax "Outer")	05-Aug	Good	0	0	0	0	Campbell	Nothing.
305-33.230	Vasilief Bay (Qatayagux)	05-Aug 29-Aug	Good Good	0 4	0 3	0 1,475	0 0	Campbell Campbell	Nothing. Plus 3 pink carcasses.
305-33.240	Vasilief Bay	05-Aug 29-Aug	Good Good	0 0	0 3	0 2,880	0 0	Campbell Campbell	30 pinks at mouth.

-Continued-



Table 4. (page 3 of 3)

Stream Number	Stream Name/Location <sup>b</sup>	Date	Survey Condition	Species				Observer	Remarks
				Sockeye	Coho	Pink	Chum		
305-33.270	1st. Camp Creek (Tanaagis)	05-Aug	Good	0	0	0	0	Campbell	400 pinks and 100 chums at mouth. Plus 750-1,000 salmon (mixed) holding in the cove.
		20-Aug	Good	0	0	6,242	0	Campbell	390 pinks at mouth. Chums paired and spawning. Additional 10 chum carcasses.
		29-Aug	Good	2	0	5,975	362	Campbell	250 pinks and 1 chum at mouth. Plus 23 chum carcasses.
305-33.290	Unnamed (Amdga)	05-Aug	Good	0	0	0	0	Campbell	Nothing.
Amlia (Amlax) Island:									
305-27.110	Unnamed	06-Aug	Good	0	0	0	0	Campbell	Nothing.
305-26.90	Hungry Bay (East) (Amunaxax)	06-Aug	Good	0	0	0	0	Campbell	Nothing.
305-26.60	Hungry Bay (Tanagayux)	06-Aug	Good	0	0	0	0	Campbell	700 pinks at mouth.
305-26.40	Hungry Bay (West) (Ayangilgis)	06-Aug	Good	0	0	0	0	Campbell	Nothing.

<sup>a</sup> All surveys were conducted on foot.

<sup>b</sup> Atkan Aleut stream names in parentheses.

Table 5. Peak and estimated total salmon escapement by Island, species, and stream for selected streams in the Atka/Amlia Management Area, 1992.

Stream Number	Stream Name/Location Aleut (Niigugix) Place Name	Species							
		Sockeye		Coho		Pink		Chum	
		Peak	Total <sup>a</sup>	Peak	Total <sup>a</sup>	Peak	Total <sup>a</sup>	Peak	Total <sup>a</sup>
Atka Island									
305-49.140	Spike's Camp (Chunixsax)	0	0	0	0	2,982	5,100	4	7
305-49.160	Range Creek (Aaguliigagix)	0	0	2	2	5,045	8,324	3	5
305-49.150	Army Dock Creek (Qizang Chiganaa)	0	0	0	0	3,903	6,679	0	0
305-46.260	Korovin Creek (Iamlam Chuqaa)	1,100	2,200	0	0	3,420	5,643	0	0
305-47.290	Old Harbor (Kangixtax)	0	0	0	0	3,442	5,679	1,397	2,396
305-47.300	North Harbor (Ugila)	0	0	0	0	4,645	7,664	4	7
305-46.280	Clear Creek (Tagalum Angtan Chiganaa)	0	0	0	0	540	1,043	0	0
305-46.250	Martin Harbor (Chigzang)	0	0	0	0	2,748	5,295	0	0
305-46.270	1 mi.E.Sarana Co.	0	0	0	0	200	200	0	0
305-46.240	Sarana Cove (Qyasux "Outer")	0	0	0	0	1,052	1,736	0	0
305-46.230	Sarana Cove (Qyasux "East")	0	0	0	0	3,800	6,308	0	0
305-46.220	Sarana Cove (Qyasux "West")	0	0	0	0	782	1,290	0	0
305-46.210	2 1/2mi.E.Egg Pt.	0	0	0	0	10	17	0	0
305-42.200	Egg Bay (Asagax)	0	0	0	0	2,010	3,317	0	0
305-33.190	Vasilief Bay (Amunaxax "Outer")	0	0	0	0	0	0	0	0
305-33.200	Vasilief Bay (Amunaxax "Inner")	0	0	0	0	0	0	0	0
305-33.230	Vasilief Bay (Qatxayagux)	4	4	3	3	1,475	2,434	0	0
305-33.270	First Camp (Tanaangis)	2	2	0	0	6,242	10,299	362	615
305-32.290	Unnamed	0	0	0	0	0	0	0	0
Amia Island <sup>b</sup>									
305-52.110	Unnamed (Haanugis)	0	0	0	0	0	0	0	0
305-52.90	Hungry Bay (Amunaxax)	0	0	0	0	0	0	0	0

-Continued-

Table 5. (page 2 of 2)

Stream Number	Stream Name/Location Aleut (Niigugix) Place Name	Species							
		Sockeye		Coho		Pink		Chum	
		Peak	Total <sup>a</sup>	Peak	Total <sup>a</sup>	Peak	Total <sup>a</sup>	Peak	Total <sup>a</sup>
305-52.60	Hungry Bay (Tanagayux)	0	0	0	0	700	700	0	0
305-52.40	Unnamed (Aayangilllis)	0	0	0	0	0	0	0	0
Atka-Amlia Area Total		1,106	2,206	5	5	42,996	71,728	1,770	3,030

<sup>a</sup> A fifteen day average stream life was used for all pink and chum salmon escapements. For all pink and chum salmon escapements with only a peak count or where the computed value was less than the peak count, an expansion factor of 1.65 was used for pink salmon, and 1.7 for chum salmon. The values were derived from the ratio of peak count to total estimated escapement for streams where ascending, peak peak count and descending counts were available. Sockeye and coho salmon escapements in small clear streams were not expanded.

<sup>b</sup> Weather prevented additional surveys of Amlia Island streams.

Table 6. Salmon spawning habitat, estimated spawning capacity, and preliminary escapement goals for selected streams on Atka and Amlia Islands, 1992.

1993 Stream #	Stream Name Or Location	Aleut (Niigugix) Place Name	Spawning Habitat (Sq. Meters)	Habitat Evaluation			Percentage of 1982 Survey <sup>d</sup>			1992 Foot Surveys	Preliminary Escape. Goals	
				Est. Spawning Low <sup>a</sup>	Capacity Mid <sup>b</sup>	High <sup>c</sup>	25 %	50 %	100 %		Low	High
Amlia (Amalax) Island (North West side):												
305-26-40	(West Hungry Bay)	Aayangilgis	No habitat survey				1,775	3,550	7,100		1,500	3,000
305-26-60	(Hungry Bay)	Tanagayux	No habitat survey				3,000	6,000	12,000	700	2,000	4,000
305-26-90	(East Hungry Bay)	Amunaxax	No habitat survey				5,000	10,000	20,000		4,000	8,000
305-26-110	Unnamed	Haanugix	No habitat survey				1,700	3,400	6,800		1,500	3,000
Atka (Atxax) Island:												
305-45-50	(Bluefox Bay)	Agzangtusix	No habitat survey				7,500	15,000	30,000		4,000	10,000
305-46-260	Korovin Creek <sup>e</sup>	Imlam Chuqaa	543 <sup>e</sup>	760	1,086	1,629	2,963	5,925	11,850	3,420	2,000	4,000
305-46-280	Clear Cr., Milky R.	Tagalum Angtan-Chiganaa	1,059	1,483	2,118	3,177	400	800	1,600	540	1,000	2,000
305-46-250	(Martin Harbor)	Chigzang	4,555	6,377	9,110	13,665	6,175	12,350	24,700	2,748	4,000	9,000
305-46-240	(Sarana Cove)	Qyasxux (Outer)	No habitat survey				1,550	3,100	6,200	1,052	1,000	2,500
305-46-230	(Sarana Cove)	Qyasxux (East)	2,774	3,884	5,548	8,322	7,875	15,750	31,500	3,800	3,000	5,000
305-46-220	(Sarana Cove)	Qyasxux (West)	1,351	1,891	2,702	4,053	2,500	5,000	10,000	782	2,000	3,000
305-45-200	(Egg Bay)	Asagax	No habitat survey				3,250	6,500	13,000	2,010	2,000	3,000
305-45-130	(Banner Bay)		No habitat survey				5,000	10,000	20,000		4,000	8,000
305-47-290	Old Harbor	Kangiixtax	6,372	8,921	12,744	19,116	4,000 <sup>f</sup>	8,000 <sup>f</sup>	16,000 <sup>f</sup>	3,442	4,000	12,000
305-47-300	North Harbor <sup>g</sup>	Ugilga	5,628 <sup>g</sup>	7,879	11,256	16,884	21,500 <sup>g</sup>	43,000 <sup>g</sup>	86,000 <sup>g</sup>	4,645	4,000	10,000
305-49-140	Spike's Camp	Chunixsax	1,396	1,954	2,792	4,188	4,000	8,000	16,000	2,982	2,000	5,000
305-49-150	Army Dock Creek	Qizang Chiganaa (Yaxagim Chuqaa)	3,834	5,368	7,668	11,502	7,050	14,100	28,200	3,903	5,000	8,000
305-49-160	Range Creek <sup>f</sup>	Aaguliigagix	8,840	12,376	17,680	26,520	2,538 <sup>f</sup>	5,075 <sup>f</sup>	10,150 <sup>f</sup>	5,045	7,000	15,000
305-33-90	Explorer Bay		No habitat survey				2,750	5,500	11,000		2,000	3,000
305-33-120	Kobakof Bay		No habitat survey				3,825	7,650	15,300		3,000	4,000
305-33-290	Unamed	Amdaga	No habitat survey				2,750	5,500	11,000		2,000	3,000
305-33-270	First Camp	Tanaangis	10,195	14,273	20,390	30,585	13,250	26,500	53,000	6,242	10,000	20,000
305-33-240	Unnamed		No habitat survey				9,500	19,000	38,000		8,000	10,000
305-33-230	Vasilief Bay	Qatxayagux	No habitat survey				9,500	19,000	38,000	1,475	8,000	10,000

-Continued-

Table 6. (page 2 of 2)

1993 Stream #	Stream Name Or Location	Aleut (Niigugix) Place Name	Spawning Habitat (Sq. Meters)	Habitat Evaluation			Percentage of 1982 Survey <sup>d</sup>			1992 Foot Surveys	Preliminary Escape. Goals	
				Est. Spawning Low <sup>a</sup>	Capacity Mid <sup>b</sup>	High <sup>c</sup>	25 %	50 %	100 %		Low	High
305-33-200	Vasilief Bay	Amunaxax (Outer)	No habitat survey				1,875	3,750	7,500		1,500	2,500
305-33-190	Vasilief Bay	Amunaxax (Inner)	No habitat survey				11,875	23,750	47,500		9,000	15,000
Total all (26) streams:				-	-	-	143,100	286,200	572,400	42,786	97,500	182,000
Total for (11) streams with habitat surveys:			46,547	65,166	93,094	139,641	72,250	144,500	289,000	37,549	44,000	93,000

<sup>a</sup> Square meters of spawning area X 1.4 (Barrett et al., 1990).

<sup>b</sup> Square meters of spawning area X 2.0 (Swanton and Dalton, 1993).

<sup>c</sup> Square meters of spawning area X 3.0 (Swanton and Dalton, 1993).

<sup>d</sup> Aerial surveys, except for foot surveys of Old Harbor and Range Creeks.

<sup>e</sup> Only main outlet stream surveyed, lake shore and small inlet streams not surveyed; possibly additional 250+ sq.m. of habitat.

<sup>f</sup> Values less than stream capacity, foot survey may have underestimated abundance or habitat survey may be too high.

<sup>g</sup> Survey in 1982 may have been overestimated, spawners may only use the upper 1/3 of stream in exceptional years.

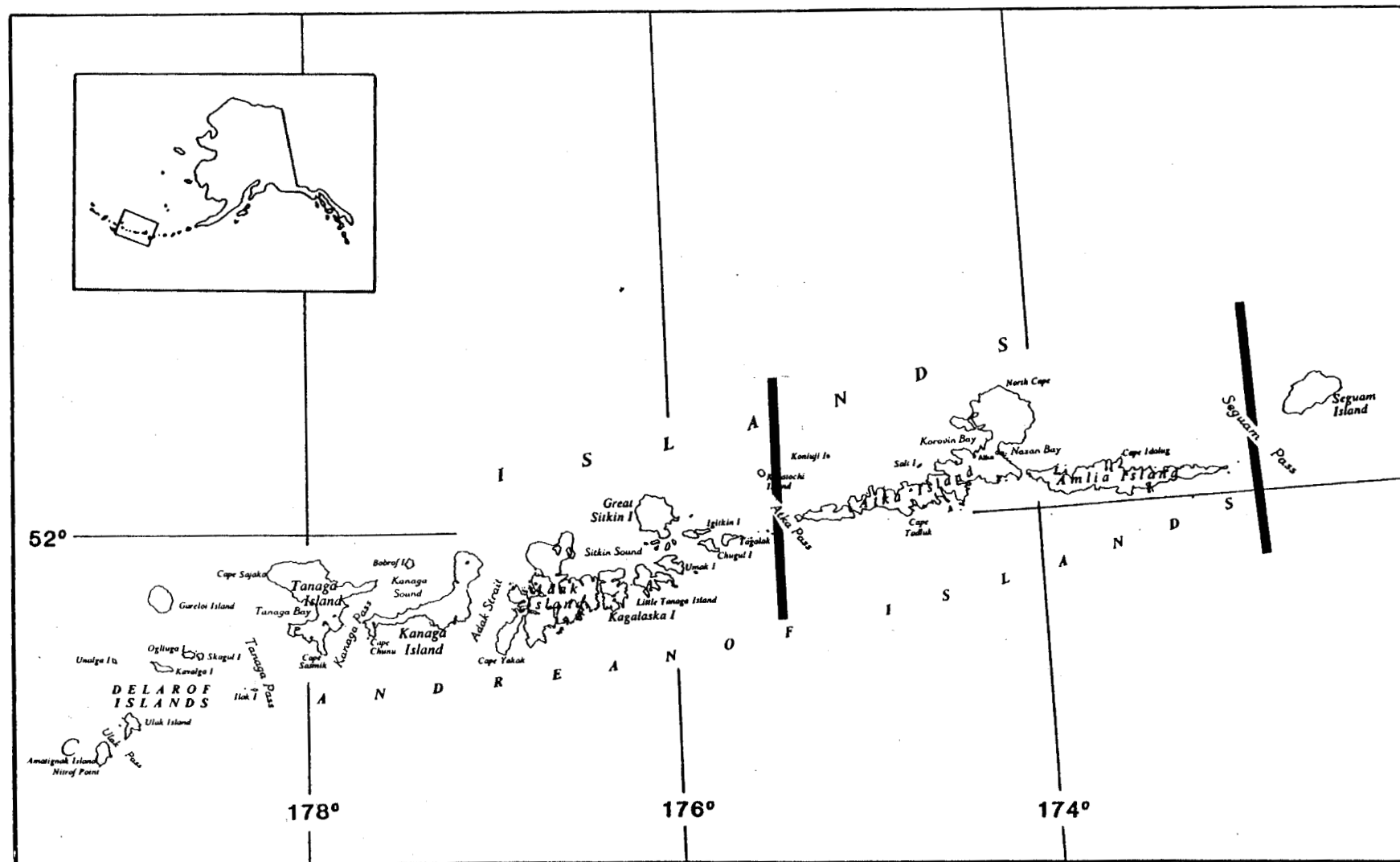


Figure 1. Location of the Atka/Amlia Management Area

# ALEUTIAN ISLANDS

## ANDREANOF ISLANDS


1993

## ALASKA DEPARTMENT OF FISH AND GAME ATKA-AMLIA ISLANDS SALMON STATISTICAL AREAS

First Edition - January 1993 Prepared by R. Campbell Approved by J. Shaul

This map is intended as a general guide for fishermen, tender operators, and industry personnel. For exact locations of the district and section boundaries, loan lines, closed waters, legal gear, etc., consult the current issue of the Alaska Commercial Fishery Regulations for the Atka-Amlia Islands Area (See Chapter 11 - Articles 1 and 3, and Chapter 39 - Articles 1, 2, and 9).

The approximate location of each gear type, district and section boundaries, and the statistical areas used in reporting catches are depicted on this map and are designated as follows:

Area boundaries - 

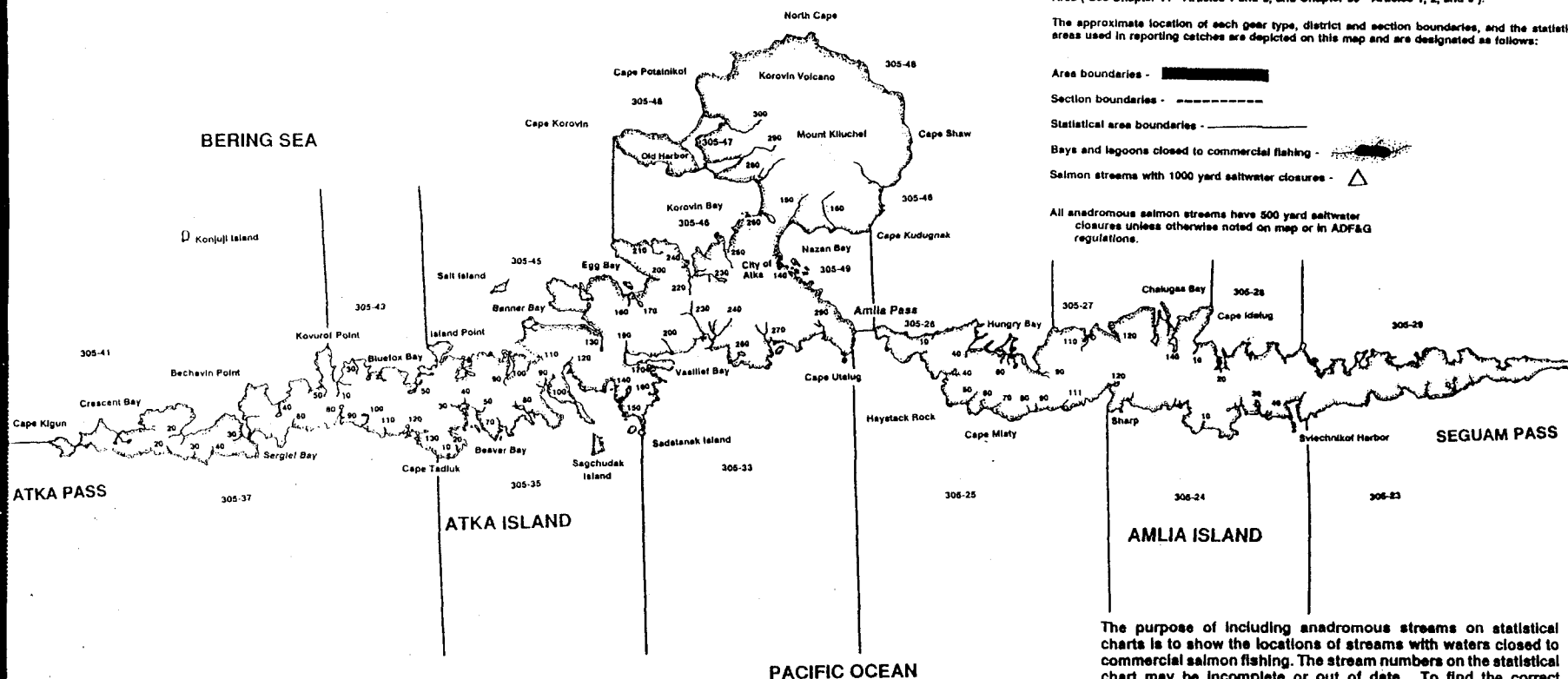
Section boundaries - 

Statistical area boundaries - 

Bays and lagoons closed to commercial fishing - 

Salmon streams with 1000 yard saltwater closures - 

All anadromous salmon streams have 500 yard saltwater closures unless otherwise noted on map or in ADF&G regulations.



The purpose of including anadromous streams on statistical charts is to show the locations of streams with waters closed to commercial salmon fishing. The stream numbers on the statistical chart may be incomplete or out of date. To find the correct numbers refer to the most recent Alaska Anadromous Stream Catalogue.

Figure 2. Atka and Amlia Islands statistical areas and streams

## **APPENDIX**



Appendix A. Peak and estimated total escapements for Aleutian Islands salmon, 1982.<sup>a</sup>

Island	Species <sup>b</sup>							
	Pink		Sockeye		Chum		Coho	
	Peak Cnt.	Est. Total	Peak Cnt.	Est. Total	Peak Cnt.	Est. Total	Peak Cnt.	Est. Total
Akutan <sup>c</sup>	10,500	19,425	-	-	-	-	-	-
Unalaska	1,541,317	2,851,436	44,995	89,990	100	175	300	525
Umnak <sup>d</sup>	295,385	546,462	805	1,610	0	0	143	250
Amila	138,258	255,777	453	906	772	1,351	0	0
Atka	578,086	1,069,459	3,971	7,942	1,482	2,594	825	1,444
Igiktan	0	0	0	0	0	0	0	0
Great Sitkin	7,720	14,282	0	0	0	0	0	0
Umak	230	426	0	0	0	0	0	0
Little Tanaga	1,550	2,868	0	0	0	0	0	0
Kagalaska	3,310	6,124	975	1,950	0	0	0	0
Adak	362,438	670,510	993	1,986	0	0	0	0
Kanaga	18,448	34,129	0	0	0	0	0	0
Tanaga	68,585	126,882	0	0	0	0	0	0
Semisopochnoi	400	740	0	0	0	0	0	0
Amchitka	1,248	2,309	0	0	0	0	0	0
Rat Island	0	0	0	0	0	0	0	0
Kiska	43,393	80,277	8	16	1	2	20	35
Aggatu <sup>e</sup>	1,500	2,775	-	-	-	-	-	0
Shemya	0	0	0	0	0	0	0	0
Attu <sup>f</sup>	133,589	247,140	220	440	1	2	14	25
Total	3,205,957	5,931,020	52,420	104,840	2,356	4,123	1,302	2,279

<sup>a</sup> Streams surveyed between 8/12 and 9/17.

<sup>b</sup> Peak salmon counts expanded: by 1.85 for pink salmon, based on the average ratio of peak surveys to total estimated for 1985, 1988, and 1990 (McCullough, 1986, 1989, Shaul et al., 1991); 1.75 for chum salmon (Shaul, et al., 1991); by 2.0 for sockeye salmon (Barrett, et al., 1984); 2.4 for coho salmon based on data from Minard (1986).

<sup>c</sup> Harbor Creek only stream surveyed.

<sup>d</sup> Includes sockeye in Village Lake (670) estimated from number of spawning redds.

<sup>e</sup> Island not surveyed, estimate based on stream morphology and USFWS salmon observations on east side of the island.

<sup>f</sup> Only 40% of the potential salmon streams surveyed in 1982.

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